UNITED STATES PATENT AND TRADEMARK OFFICE

I, Gwen Jacqueline SANGER BEng, CEng, MIMechE,

translator to RWS Group plc, of Europa House, Marsham Way, Gerrards Cross, Buckinghamshire, England declare;

1. That I am a citizen of the United Kingdom of Great Britain and Northern Ireland.

2. That I am well acquainted with the French and English languages.

3. That the attached is, to the best of my knowledge and belief, a true translation into the English language of the accompanying copy of the specification filed with the application for a patent in France on June 28, 2002 under the number 02/08,273.

4. That I believe that all statements made herein of my own knowledge are true and that all statements made on information and belief are true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the patent application in the United States of America or any patent issuing thereon.

For and on behalf of RWS Group plc

The 16th day of May 2003

HEADSET FOR BICYCLES, CYCLES AND THE LIKE

The invention relates to the technical field of components for cycles, bicycles and more particularly to headsets used especially in the head tube - fork pivot and handlebar support bracket assembly.

The design of headsets to adapt and orient the handlebar stem relative to the head tube, in particular, has evolved a great deal for purposes of simplification and of reducing the number of components. Units known as cartridges containing, as a one piece assembly, the needle or ball bearing assemblies and the outer and inner bearing cups are currently available on the market, this unit then being positioned either in the conical accommodating bore of the head tube or in dishes of cylindrical exterior profile and conical interior profile pushed into the head tube and then entailing the fitting of additional attached clamping elements.

The problem nonetheless lies in the difficulty of adjusting the position of the cartridges located on each side of the ends of the head tube, where there is very often a problem of misalignment, which means that this may lead to damage to the seals through wear and contact, or to play appearing.

Another problem posed in the prior art lies in the search for simplification during assembly and for a reduction in the number of parts involved in a headset assembly.

These characteristics and others yet will become clearly apparent from the remainder of the description.

According to a first characteristic of the invention, the headset for bicycles, cycles and the like of the type comprising, in a one-piece cartridge, a bearing

assembly inserted between an outer cup and an inner cup, the outer cup bearing against the interior wall of a bore in the head tube, is notable in that it comprises, as one piece, said cartridge including a floating reinforced seal, on which there is positioned a ring which itself on the outside has a seal bearing against the outer cup, said ring being in contact with the inner cup of the cartridge, the ring housing, in its upper part, an O-ring and a compression ring in order to give compression stresses.

According to another characteristic, the outer cup is designed on its interior wall to have a cut-out allowing a profiled seal to float and housing an insert to compensate for misalignment of the contact regions.

These characteristics and others yet will become clearly apparent from the remainder of the description.

In order to place the subject of the invention illustrated nonlimitingly in the figures of the drawing where:

- Figure 1 is a view in longitudinal section of a head tube that can accommodate two headsets according to the invention, an upper one and a lower one.
- Figure 2 is a part view in section on a larger scale illustrating the positioning of the upper and lower cartridges of the headsets.
- Figure 3 is an exploded part view prior to the mounting of the upper headset.
- Figure 4 is a part view zooming in on half of part of the upper headset.
- Figure 5 is a part view zooming in on Figure 4 to illustrate the mounted assembly, with the ring, the O-ring and the compression ring.

- Figure 6 is a part view zooming in on half of the cartridge in the bottom part of the head tube intended to be positioned.

In order to give a more concrete idea of the subject of the invention, it is now described in a nonlimiting manner illustrated in the figures of the drawings.

The reference (1) denotes a head tube for bicycles and the like, able to accommodate, in each of its ends, a headset (A-B) in their general identification, allowing the insertion of a fork pivot. Each headset is designed to include a profiled cartridge (C1-C2) able to be force-fitted inside the bore of the head tube. According to the invention, the two cartridges are identical, which means that just one of them will be described.

Each cartridge comprises a profiled outer cup (2) with a peripheral cylindrical wall (2a) able to be forcibly inserted into the bore of the head tube, said wall being extended at the top with a peripheral horizontal part (2b) forming a flange bearing against the end edge of the head tube. The cylindrical wall (2a) is extended downward in the form of a conical wall (2c) directed inwards, constituting the seat for the needle bearings (3). The inner cup (4) has a conical profile (4a) with a bottom end (4b), a straight and vertical flat wall (4c) parallel to the longitudinal axis of the headset. The top end (4d) has a cut (4e) the function of which will become evident later. The top plane (4f) of the cup adjacent to said cut is straight and horizontal. A profiled peripheral seal (5) reinforced with a core or insert (6) made of brass or some other material is placed resting against the interior wall (2d) of the outer cup, and the wall opposite of the inner cup. More specifically, the interior wall of the outer cup is designed with a cut-out or recess (2f) made over part of its height over a distance greater than the

thickness of the seal reinforced with the insert. This brass insert stiffens the assembly. The seal with insert thus rests against an internal face of the wall (2a) of the outer cup, at the position of the cut-out and bearing against a nose-like end part (4g) of the inner cup. The seal (5) with insert (6) has, on the inner cup side, an oblique face (6a) and its interior edge face (6b) is not in contact with the profile opposite belonging to the inner cup. The seal with insert thus floats in the space formed, defined above, so that it allows correction of alignment of the regions of contact with the fork pivot (P).Said seal is clipped into its housing and held in position by the nose-forming end part (2g) of the aforementioned cut-out (2f) forming a stop.

The assembly thus defined constitutes the cartridge.

The headset is then supplemented by its upper front part with a seal (7) and an upper ring (8) which has a flange (8a) pressing against the seal (7), and a lower profile (8b) bearing as a reference on the aforementioned inner cup. The ring (8) has a bore (8d) and slides on the outside of the fork pivot. The ring sits, as a reference bearing, against the cartridge lower cup facing wall. The ring (8) is thus configured in its top plane with a recess (8c) to house an O-ring (9) and a compression ring (10) completing the guidance of the fork pivot. Similarly, in the lower part, the headtube takes a cartridge which also comprises a seal with insert, arranged between the lower and upper cups in the same configuration as before, and a ring (12) pressing against the interior face of the inner cup.

The headset thus produced offers great advantages: it is easy to assemble, with a low number of parts, and also very advantageously allows the alignment of the regions of contact and of abutment with the fork pivot to be corrected. The connection is thus improved and

the user finds better comfort in the use of this assembly. The lower headset includes the cartridge (C2) depicted in Figure 6 and has substantially the same arrangement.